

Project Profiles

Refinery & Chemical Systems



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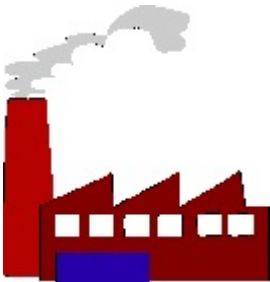
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Titanium Dioxide Plant Design

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| Description: | Two large Titanium Dioxide plants are being designed for installation in China. Phase I is to be $TiCl_4$ production with the Oxidation plant being built the following year. The plants will process ore into pigment. |
| Hardware: | Four sets of redundant Allen Bradley ControlLogix controllers along with a Wonderware Archestra system is being specified for this project. In addition all of the field instruments will be HART enabled and a maintenance network will be supplied. |
| Operator Interface: | A complete network of computers will be used in the remote control room along with remote clients spread throughout the facility. |
| Engineering Activities: | P and ID Development, Control System Design, Control System Wiring Diagrams, Instrument Design, Instrumentation Data Sheets, and Documentation have been provided. Presentations to the end user in China have been made. |
| System Documentation: | P. and I.D.s , Instrument Specification Sheets, Instrument List, Control System Wiring Diagrams, Loop Diagrams, and a Control Description. |



Scale Modification for Resin Mixing System

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| Description: | The system automatically combines 5 major liquids (greater than 200 lbs/batch) and 5 minor liquids (less than 200 lbs/batch) and notifies the operator to add the dry ingredients. The minor ingredient scale was modified to improve system performance by increasing communication speed and improving precision. The system produces 6 different formulas and controls storage tanks for automatically discharging to glove machines. Complete Batch reports and material Inventory reports are produced. The system controls 150 solenoid operated ball valves. |
| Hardware: | Allen-Bradley PLC 5/25 with Digital I/O, Analog Inputs, and a Basic module providing communications to 6 local panels, each with a Cincinnati Electrosystems 20 Character Message Unit and 8 digit keypad. Two additional Basic Modules are used to communicate with the Mettler scale systems used in weighing each mixer. |
| Operator Interface: | A Nematron 4000 Workstation (Panel Mounted 286 Computer) running the Screenware Operator Interface Program. The computer is used for system monitoring and control and provides password controlled access for recipe changes. A rework capability is included for automatically re-running batches. Each mixer has a Local Panel for the operator to use. The keypads are used to enter operator ID numbers and Resin Lot numbers. |
| Engineering Activities: | Modify Wiring Diagrams, PLC Programming, Screenware Programming, System Documentation and System Test Procedures for FDA Validation. |
| System Documentation: | Control Description, Operating Manual, Software Documentation including Screenware Application and Screen Files, and System Test Procedures. |



Refinery Data Collection

Description: In this project we translated an ASCII string output from a DCS system into a PLC based network. Twenty three process variables were parsed and stored in PLC registers.

Hardware: Allen Bradley 5/04 programmable controller with a 1747-BAS Basic Card. The Basic Card was connected to the DCS system with an RS-232C serial cable.

Operator Interface: None.

Engineering Activities: Basic Module programming, error checking, and error recovery.

System Documentation: Software Documentation for the Basic program.



Automatic Paint Batching

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| Description: | In this project we automatically feed 20 different major components to the batch tanks. A Micromotion mass flow meter is used to measure the quantity of each component. The tank farm is also monitored and a time based recirculation system implemented. Tank inventories are also recorded. |
| Hardware: | Allen Bradley 5/60 programmable controller with remote racks and Block I/O located throughout the facility. |
| Operator Interface: | Conventional illuminated pushbuttons, selector switches and pilot lights were used. A PanelView 1200 is used to monitor the tank farm inventories. |
| Engineering Activities: | Control System wiring diagrams, Control Description, PLC and PanelView programming and Instrument Installation details were provided. |
| System Documentation: | As built drawings and complete Software Documentation were provided. |



Hazardous Gas Detection for Manufacturing Plant

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| Description: | This system monitors over 100 physical locations. Three separate computer systems were used to provide analog and alarm data. Sensor locations were shown on CRTs using simplified floor plans with live data. |
| Hardware: | Sierra Monitor Corporation SENSYS units were used to provide an RS-485 network that communicated to the computer system. |
| Operator Interface: | AIMAX+ was used as the operator interface on all three systems. Trackball access to detail screens was provided for easy operator access to vital information. System trending (real time and historical) were included along with alarm logging. |
| Engineering Activities: | AIMAX+ Programming, Operating Manuals, Software Documentation and Start-Up Assistance. |
| System Documentation: | Complete Program Listing of AIMAX+ database and Screen Printouts. Operating Manual included information for both the operator and supervisory personnel. System configuration changes were also described. |



Level and Flow Instrumentation for a Chemical Plant

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| Description: | In this project we specified and engineered instrumentation modifications for Industrial waste water processing and final product storage in an existing facility. |
| Hardware: | Ultrasonic Level Transmitters and Vortex shedding meters were added. |
| Operator Interface: | Conventional meters were added to the control panels. |
| Engineering Activities: | Instrument specifications (per ISA 5.20), Control System wiring diagrams, and Instrument Installation details were provided. |
| System Documentation: | As built drawings and specification were provided. |



Industrial Waste Water Treatment

Description: In this project we specified and engineered control system and instrumentation modifications for Industrial waste water processing at a large semi-conductor facility. We documented the previously installed instrumentation and produced a bid-package for system replacement. This system utilized treatment, biotreatment and filtration.

Hardware: Siemens/TI 545 Programable Controllers

Operator Interface: Intellution DMACs stations.

Engineering Activities: Piping and Instrument Diagrams (P&IDs), Instrument specifications (per ISA 5.20), Control System wiring diagrams, Schedule, and a Control System bid package were prepared.

System Documentation: Bid Package drawings and specifications were provided.

